

Crest Factor reduction and amplitude pre-distortion for multi-carrier signals

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Abstract:

A technique for Crest Factor reduction and amplitude pre-distortion of multi-carrier signals is described. The input to the multi-carrier amplifier is modified by a Crest Factor reduction and amplitude pre-distortion circuit, prior to being applied to the amplifier. The Crest Factor reduction and amplitude pre-distortion circuit first clips the amplitude of the signal, converts the clipped signal to baseband to produce the baseband representative of each carrier, filters each baseband representative to remove the unwanted signals, up converts each baseband representative to its multi-carrier baseband frequency and finally the up converted signals are combined to produce the multi-carrier baseband signal. The Crest Factor reduction and amplitude pre-distortion circuit next pre-distort the amplitude of the signal using a look up table before applying the signal to the amplifier. The main signal input to the Crest Factor reduction and amplitude pre-distortion circuit could be a baseband, an intermediate frequency (IF) or radio frequency (RF) signal. The feedback signal to Crest Factor reduction and amplitude pre-distortion circuit is the envelop of the amplifier output. The Crest Factor reduction and amplitude pre-distortion could be performed in digital or analog domain.